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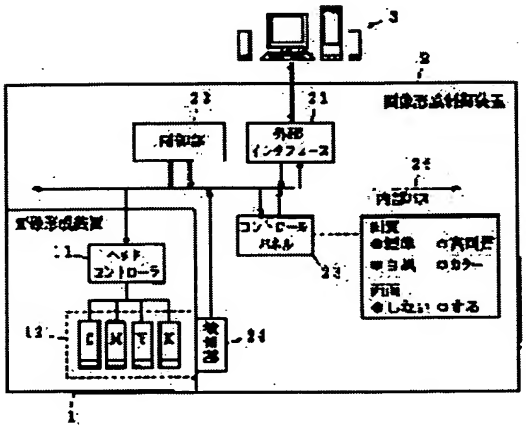
(54) CONTROLLER FOR LIQUID EJECTION RECORDING

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a controller for liquid ejection recording that does not perform a perfecting recording in a condition that image quality is lowered.

SOLUTION: A kind of a liquid tank or a recording head unit loaded to a recording section 12 is detected by a sensing section 24. A control panel 23 sets a recording mode optimum to the kind of the liquid tank or the recording head unit detected by the sensing section 24. When the recording mode is one using a large amount of liquid, selecting of a recording mode of perfecting recording is prohibited. In the recording mode using the large amount of liquid, an image having bad quality on a rear face due to a see-through view is possibly produced. Therefore, the perfecting recording is not performed in the above recording mode, thereby eliminating unexpected lowering of the image quality.



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CLAIMS

[Claim(s)]
[Claim 1] In a fluid injection record control unit which controls a fluid injection recording device which records by injecting a liquid A mode setting means by which a desired recording mode can be set [from] up among recording modes which show whether two or more recording modes and double-sided record from which the amount of liquids to be used differs are performed, It has a control means which controls said fluid injection recording device according to a recording mode set up by this mode setting means. Said mode setting means A fluid injection record control unit characterized by forbidding selection of a recording mode which performs said double-sided record when a recording mode with many amounts of liquids used as said recording mode is set up.
[Claim 2] It is the fluid-injection record control unit according to claim 1 characterized by to forbid selection of the recording mode which it has a detection means detect the class of liquid tank with which said fluid-injection recording device is furthermore equipped, and said mode-setting means sets up a recording mode with many [when being equipped with a liquid tank used by recording mode with many amounts of liquids which this detection means uses is detected] the amounts of liquids use it, and performs said double-sided record.
[Claim 3] A liquid tank used by recording mode with many said amounts of liquids to be used is a fluid injection record control unit according to claim 2 characterized by being a color ink tank.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the fluid injection record control unit which has a recording mode for double-sided record especially about the fluid injection record control unit which controls the fluid injection recording device which records by injecting a liquid.
[0002]
[Description of the Prior Art] The fluid injection recording device which records an alphabetic character or an image on a record medium-ed injection or by carrying out the regurgitation is conventionally developed in drops, such as ink, as image formation equipment. Since record of a regular paper is possible for a fluid injection recording device, and its sound of operation is quiet and it is cheap, attention is attracted. Moreover, there is an advantage that it can be managed even if installation area is small, since the miniaturization is easy compared with a laser beam printer etc. For this reason, it is broadly used for the recording device for a small color printer, a network printer, and word processors etc.
[0003] When performing a gradation expression in a fluid injection recording device, 1 pixel is constituted from two or more dot matrices, and the method of expressing a shade using a dither method, an area gradation method, etc. is used. For example, the method of determining and recording the pattern of a dot matrix on JP,61-5677,A by the error diffusion method is indicated. When performing color record, it is common to use the ink of cyanogen, a Magenta, yellow, and black, and these four colors are combined, for example, the above gradation expressions are performed for every color, and many neutral colors other than 4 colors are expressed. However, fundamentally, since each dot in a dot matrix was formed only with 2 gradation called the existence of ink or a toner, it had the problem that image quality failures, like the light color section etc. becomes unnatural occurred.
[0004] As a method of solving this problem, the gradation expression is performed by changing the number of drops driven into the same pixel by JP,55-79162,A, JP,4-361049,A, and JP,7-323536,A. When such an overprint performs a gradation expression, light color ink is used in many cases. However, only in light color ink, what records by using not only light color ink but dark color ink according to the property of record data is developed as it may not be suitable for charts, such as a text document and a graph containing solid one, for example, is indicated by Japanese Patent Application No. No. 228642 [nine to].
[0005] On the other hand, also in a fluid injection recording device, record may be carried out to both sides of a record medium-ed. However, in a fluid injection recording device, fundamentally, since a liquid is the method which records by permeating a record medium-ed, if there are many amounts of the liquid made to adhere to a record medium-ed, it will permeate to the rear face of a record medium-ed, and the so-called reverse side projection will occur. When a double-sided recording mode is specified as technology of preventing such reverse side projection as indicated by JP,7-314734,A, ink discharge quantity is decreased, or it considers culling out and reducing record concentration.

[0006] However, since the amount of liquids adhering to a record medium-ed increases dramatically when recording the image of the high quality which carried out the overprint of the light color ink as mentioned above, and expressed the shade, it is easy to carry out reverse side projection. Therefore, even if recorded by reducing record concentration, reverse side projection could not be prevented, but the image quality of a reverse side was deteriorating at the time of double-sided record. Moreover, after reducing record concentration extremely so that reverse side projection might not be carried out, a dark color could not be expressed but there was a problem that image quality was unmaintainable.
[0007]
[Problem(s) to be Solved by the Invention] This invention was made in view of the situation mentioned above, and aims at offering the fluid injection record control unit which does not perform double-sided record in the condition that image quality deteriorates.
[0008]
[Means for Solving the Problem] In a fluid injection record control unit which controls a fluid injection recording device which records by this invention injecting a liquid A mode setting means by which a desired recording mode can be set [from] up among recording modes which show whether two or more recording modes and double-sided record from which the amount of liquids to be used differs are performed, It has a control means which controls said fluid injection recording device according to a recording mode set up by this mode setting means, and when a recording mode with many amounts of liquids used as a recording mode is set up, it is characterized by forbidding selection of a recording mode which performs double-sided record. The reverse side projection of the record medium-ed recorded by recording mode with many amounts of liquids to be used is carried out, and sufficient image quality may not be acquired at the time of record on the back. Therefore, selection of a recording mode which performs double-sided record is forbidden.
[0009] In addition, setting out of a recording mode with many amounts of liquids to be used can be set up when being equipped with a liquid tank used by recording mode with many amounts of liquids to be used, for example, a color ink tank, is detected, and selection of a recording mode which performs double-sided record in this case can be forbidden.
[0010]
[Embodiment of the Invention] Drawing 1 is the outline block diagram showing the gestalt of operation of the 1st of this invention. the inside of drawing, and 1 -- image formation equipment and 2 -- an image formation control unit and 3 -- host equipment and 11 -- for an external interface and 22, as for a control panel and 24, a control section and 23 are [a head controller and 12 / a recording head and 21 / the detection section and 25] internal buses. This example shows the configuration with which image formation equipment 1 and the image formation control unit 2 were united. Moreover, the image formation control unit 2 is indirectly connected through host equipment 3, direct, or a network. Here, image data shall be sent from host equipment 3 as an example.
[0011] Image formation equipment 1 has the head controller 11 and the Records Department 12. The head controller 11 controls the Records Department 12, sends out a printing pulse to the Records Department 12 with image formation data at the time of image formation, and drives the Records Department 12. Moreover, migration control of the Records Department 12 may be performed.
[0012] The Records Department 12 consists of recording heads in which the record element which turns to a record medium-ed the liquid supplied from the liquid tank which stored the liquid for record, and a liquid tank, and injects it was prepared. The case where it color-prints here is shown and the liquid tank and the recording head are prepared, respectively about four colors of cyanogen (C), a Magenta (M), yellow (Y), and black (K). Of course, the configuration of the Records Department 12 is not limited to this, it may consist of one monochromatic recording head and monochromatic liquid tanks, and one recording head and a liquid tank may consist of two or more colors. The number of a recording head is also various, the number of a liquid tank is also various, and it may not correspond to 1 to 1.
[0013] Drawing 2 is the block diagram showing an example of the Records Department. For 41, as for a recording head and 43, a liquid tank and 42 are [the joint section and 44] carriage among drawing. The configuration shown in drawing 2 shows the example which the liquid tank 41 consists of free

[attachment and detachment] to the recording head 42. In this case, a recording head 42 is constituted free [immobilization or attachment and detachment] to carriage 44. The joint section 43 is formed in the recording head 42, and when equipped with the liquid tank 41, it is open for free passage in liquid between the liquid tanks 41. The liquid stored in the liquid tank 41 by this is supplied to a recording head 42.

[0014] Drawing 3 is the block diagram showing another example of the Records Department. The sign in drawing is the same as that of drawing 2 . The configuration shown in this drawing 3 shows the example from which the liquid tank 41 and the recording head 42 were constituted by one. In this case, it will equip with the liquid tank 41 and the recording head unit with which the recording head 42 was constituted by one to carriage 44.

[0015] In any case, where carriage 44 is equipped with the liquid tank 41 and a recording head 42, it records by injecting a liquid from a recording head 42 at the Records Department 12, moving with carriage 44 in a record-medium-ed top. In addition, in case high-definition record is performed, it equips with the liquid tank 41 which held light-colored ink. Or you may be the configuration that light color ink is surely contained in the liquid tank 41 with which it is equipped when performing color record. In any case, since record quality, such as an alphabetic character, is maintained about black (K), high-concentration ink can be used.

[0016] In return and the image formation control unit 2, it has an external interface 21, a control section 22, a control panel 23, the detection section 24, etc. at drawing 1 . Image formation equipment 1 is connected with these each part by the internal bus 25, and it is constituted so that a data transfer may be possible to mutual.

[0017] An external interface 21 receives the image data sent from host equipment 3. Moreover, communications control at the time of receiving image data etc. is performed.

[0018] A control section 22 processes the received image data, and changes it into image formation data, such as an image format used in case an image is formed actually. Moreover, image formation equipment 1 is controlled and it is made to print actually. A control section 22 controls the record actuation according to each recording mode especially set up in a control panel 23. For example, if the double-sided recording mode is specified, it will control to record an even-numbered page or an odd page first, and to record an odd page or an even-numbered page after that. In addition, when it has the function of a record medium-ed of reversal feed, control for reversal feed of a record medium-ed etc. is performed. When it has the function of such reversal feed and double-sided record is performed, the usual order of a page can also be recorded performing reversal feed. Moreover, when the high-definition recording mode is chosen, for example, image formation data is generated so that the overprint of multiple times can express a shade.

[0019] The detection section 24 detects whether it is equipped with the liquid tank or recording head unit which uses a lot of liquids in the case of record as a liquid used for the Records Department 12 of image formation equipment 1. It detects whether it is specifically equipped with the liquid tank or recording head unit which held light color ink. In addition, the configuration which does not have this detection section 24 is also possible.

[0020] A control panel 23 tells a user about the condition of image formation equipment 1, or receives various kinds of setting out by the user etc. For example, the recording mode of whether one side record is performed or to perform double-sided record can be set up. Moreover, the image quality recorded, for example can be chosen and each recording mode of a standard or high definition, black and white, or a color can be chosen in the example shown in drawing 1 . A user sets up and also setting out of this image quality can also be automatically set up according to the class of Records Department 12 detected in the detection section 24. When a recording mode with many amounts of liquids used so that it may mention later (for example, high-definition color mode) is specified, it can constitute from this invention so that the recording mode of double-sided record cannot be chosen. Of course, it cannot be overemphasized that assignment of the function of others [this control panel 23] or discharge, and various kinds of displays about those functions are possible. These setting out is performed from this control panel 23, and also the directions from host equipment 3 can also perform.

[0021] Drawing 4 is a flow chart which shows an example of the setting-operation of the recording mode in the gestalt of operation of the 1st of this invention. In S61, the class of the liquid tank 41 with which it is equipped, or recording head unit is detected in the detection section 24. Or when exchanged in the liquid tank 41 or a recording head unit, the class is detected and held in the detection section 24. Whether it is the liquid tank 41 used by the recording mode with many amounts of liquids to be used detects here. For example, if equipped with the liquid tank 41 containing light-colored ink, for example, a color ink tank, since the record method which carries out the overprint of the light color ink, and expresses a shade may be used, it judges with it being the liquid tank 41 used by the recording mode with many amounts of liquids to be used.

[0022] When the class of the detected liquid tank 41 or recording head unit is what is used by the recording mode with many amounts of liquids to be used, a high-definition recording mode can be set as a recording mode. Of course, a user is able to change the recording mode of a control panel 23 odor lever. If it has ink of a dark color with light-colored ink in the liquid tank 41 or the recording head unit when changed into a standard recording mode, it will mean specifying using the ink of the dark color. exchange of the liquid tank 41 or a recording head unit may be directed to a user. On the contrary, when equipped with the liquid tank 41 or a recording head unit unrecordable by high definition, you may prevent from choosing a high-definition recording mode.

[0023] In S62, it judges whether high definition is set up as a recording mode. When the high-definition recording mode is set up, in S63, it judges further whether the monochrome recording mode is specified in the control panel 23. Since it records that the overprint of the multiple times of light color ink expresses a shade in this example when the recording mode of high definition and a color is set up, the amount of liquids to be used increases and it becomes easy to generate reverse side projection. Therefore, in S64, it controls to be unable to choose the recording mode of double-sided record. Or you may make it not display the selections of the recording mode of double-sided record itself. Thus, when it is thought that there are many amounts of liquids to be used, deterioration of the image quality by reverse side projection can be prevented by making it not set up double-sided record. When the image formation of high quality is especially demanded by high-definition setting out, it is lost that image quality will be spoiled by reverse side projection.

[0024] When recording modes other than high definition, such as a standard, are set up in S62, the amount of liquids used in order to use the ink of a dark color, even when performing color record does not increase so much, and reverse side projection cannot generate it easily. Moreover, since light-colored color ink is not used but record with black (K) is performed when the monochrome recording mode is set up in S63, even if it is a high-definition recording mode, the amount of liquids to be used does not increase so much, and reverse side projection cannot generate it easily in this case. In these cases, the mode of double-sided record is made selectable in S65. At this event, a user can only specify double-sided record and a user does not need to perform double-sided record. For example, when a user chooses the recording mode which performs double-sided record and makes record start, double-sided record is performed in S66. Double-sided record records only an odd page previously among the images which should be recorded, for example, and a control section 22 controls after that to record an even-numbered page on the rear face of the record medium-ed with which the image was recorded on one side. Thus, double-sided record can be performed.

[0025] Drawing 5 is the outline block diagram showing the gestalt of operation of the 2nd of this invention. Among drawing, the same sign is given to the same portion as drawing 1 , and explanation is omitted. 13 -- for the controller section and 16, as for an internal bus and 26, a sensor and 17 are [a control panel and 14 / an external interface and 15 / the setting-out section and 27] the tank classification detection sections. This example shows the example which formed the image formation control unit 2 in host equipment 3. Image formation equipment 1 operates according to control according the image data from the image formation control unit 2 in host equipment 3 to reception and a control section 22.

[0026] The control panel 13 in image formation equipment 1 performs display of the condition in image formation equipment 1, fundamental setting out, etc. here. Of course, you may constitute so that the

same display and same setting out as a control panel 23 of drawing 1 can be performed. The external interface 14 is the same as the external interface 21 of drawing 1 , and the image data sent from host equipment 3 is received. Moreover, communications control at the time of receiving image data etc. is performed. The controller section 15 controls actuation of each part in image formation equipment 1 according to the directions from the image formation control unit 2 in host equipment 3. Moreover, after changing the image data received from the image formation control section 2 in host equipment 3 into the gestalt in which remaining as it is or image formation is possible, the head controller 11 is passed. Moreover, control of performing timing control of each part is also performed.

[0027] A sensor 16 detects the class of the liquid tank with which the Records Department 12 is equipped, or recording head unit. For example, it is detectable whether it was equipped with the monochromatic ink tank or it was equipped with the color ink tank. The detection result in a sensor 16 is told to the image formation control unit 2 in host equipment 3 through an external interface 14. Of course, constituting without forming this sensor 16 is also possible.

[0028] The internal bus 17 has connected the head controller 11, a control panel 13, an external interface 14, the controller section 15, etc., and it is constituted so that a data transfer may be possible to mutual.

[0029] The function of the control section 22 in the image formation control unit 2 removes the function of the controller section 15 from the function of a control section 22 shown in drawing 1 . Recordable image data is generated according to the recording mode set up by the setting-out section 26, and it sends out to image formation equipment 1. Furthermore, it is also possible to perform various kinds of control to image formation equipment 1.

[0030] The tank classification detection section 27 grasps with what kind of liquid tank or the recording head unit image formation equipment 1 is equipped in response to the detection result by the sensor 16 sent from image formation equipment 1. Of course, when there is no sensor 16 in image formation equipment 1, this tank classification detection section 27 is unnecessary.

[0031] The setting-out section 26 receives various kinds of setting out etc. by the dialogue with a user like the control panel 23 shown in drawing 1 . For example, setting out, setting out of the recording mode according the recording mode of whether one side record is performed or to perform double-sided record to image quality, etc. can be performed. Moreover, when a recording mode with many amounts of liquids to be used (for example, high-definition color mode) is specified, it can constitute so that the recording mode of double-sided record cannot be chosen.

[0032] Similarly explanatory drawing of an example of the actuation screen at the time of high-definition selection [in / in drawing 6 and drawing 7 / the setting-out section], drawing 8 , and drawing 9 are explanatory drawings of an example of the actuation screen at the time of standard image quality selection. As for 51, image quality selections and 52 are double-sided selections among drawing. In addition, in the item which cannot be chosen, hatching is attached and distinguished on account of a graphic display. A user can perform various kinds of setting out using an actuation screen as shown in drawing 6 and drawing 7 . In the image quality selections 51 in the "print mode" of the basic screen especially shown in drawing 6 , one of recording modes can be chosen from from among a "high speed", a "standard", and "high definition" as image quality.

[0033] At this time, the overprint for example, of the light color ink is used and carried out to the Records Department 12 of image formation equipment 1, and if equipped with the liquid tank or recording head unit suitable for a high-definition recording mode with many amounts of activity liquids which can reproduce high definition, a sensor 16 will detect this and will tell the image formation control unit 2. The tank classification detection section 27 in the image formation control unit 2 detects that image formation equipment 1 is equipped with the liquid tank or recording head unit which fitted the high-definition recording mode with many amounts of activity liquids from the information on the liquid tank sent from image formation equipment 1, or a recording head unit. The setting-out section 2 sets the recording mode about image quality as "high definition" according to the detection result by the tank classification detection section 27. Thus, in the example shown in drawing 6 , "high definition" is set up as a recording mode about image quality. Furthermore, since the liquid tank or recording head unit which fitted image formation equipment 1 at high definition is set up, it is changing into the

condition that alternative of a "high speed" and a "standard" cannot be chosen. Of course, a user may constitute such alternative selectable.

[0034] Thus, as shown in drawing 6 , when "high definition" is chosen as a recording mode about image quality and "black-and-white printing" is not chosen, this invention prevents from choosing the recording mode of double-sided record according to the flow chart shown in drawing 4 . Namely, in the output screen shown in drawing 7 , the double-sided selections 52 serve as setting out "does not carry out" double-sided record, and can choose the item of "double-sided printing" no longer. Thus, even if it performs record actuation using a lot of liquids by the high-definition recording mode and reverse side projection arises, since double-sided record is not performed, deterioration of image quality is not caused. In addition, since it is expected that the amount of liquids used does not increase so much when "black-and-white printing" is chosen, it is good even if selectable in double-sided record.

[0035] When the Records Department 12 of image formation equipment 1 is equipped with the liquid tank or recording head unit of for example, black (K) monochrome, it detects being equipped with the liquid tank or recording head unit suitable for record by the recording mode which does not have so much amount of the liquid used, and a sensor 16 tells it to the image formation control unit 2. The tank classification detection section 27 of the image formation control unit 2 holds a detection result that it is equipped with the liquid tank or recording head unit suitable for the recording mode image formation equipment 1 does not have so many amounts of liquids to be used in response to the detection result by the sensor 16 of image formation equipment 1. In such a case, the image quality selections 51 make selectable both a "high speed" a "standard" and "high definition" like the basic screen shown in drawing 8 . In addition, in the case of black (K) monochrome, "black-and-white printing" is set up. As furthermore shown in drawing 9 , in the double-sided selections 52, both "it not carrying out" and "double-sided printing" make double-sided record selectable. Although it is setting out "does not carry out" double-sided record in the example shown in drawing 9 , when a user sets up "double-sided printing", it is recordable by the recording mode of double-sided printing. The control section 22 in this case transmits the image of an odd page to image formation equipment 1 previously, after it reverses the record medium-ed with which the image was recorded on one side, can transmit the image of an even-numbered page to image formation equipment 1, and can form an image in both sides of a record medium-ed.

[0036] In addition, although the class of the liquid tank with which forms a sensor 16 in image formation equipment 1, and image formation equipment 1 is equipped, or recording head unit is notified to the image formation control unit 2 in the above-mentioned example, also in a configuration of that the detection result of such a sensor 16 cannot be notified to the image formation control unit 2, it thinks. As one cure in this case, if it is not concerned with the class of the liquid tank with which image formation equipment 1 is equipped in the setting-out section 26 of the image formation control unit 2, or recording head unit but "high definition" is set up, it can constitute so that "both sides" cannot surely be set up. Moreover, when the recording mode which set up "high-definition" "both sides", for example from the image formation control unit 2 is directed as another cure and it is equipped with the liquid tank or recording head unit suitable for a recording mode with many amounts of liquids to be used, you may constitute so that formation of an image may be refused. In this case, a message is outputted to the control panel 13 of image formation equipment 1, and you may constitute so that modification of a recording mode may be possible.

[0037] Drawing 10 is the outline block diagram showing the gestalt of operation of the 3rd of this invention. The sign in drawing is the same as that of drawing 1 and drawing 5 . This example shows the example which made the function of the image formation control unit 2 share with image formation equipment 1 and host equipment 3. In the setting-out section 26 prepared in host equipment 3, various kinds of setting out can be performed like the setting-out section 26 shown in above-mentioned drawing 6 . Especially, setting out of the recording mode about image quality and the recording mode about double-sided record can be set up. As shown at this time, for example, drawing 4 , while being equipped with the liquid tank or recording head unit suitable for a recording mode with many amounts of liquids used for the Records Department 12 of image formation equipment 1 and setting up a high-definition

recording mode, when the recording mode of color record is set up, selection of a double-sided recording mode is forbidden. The class of the liquid tank with which image formation equipment 1 is equipped, or recording head unit can be detected in the detection section 24, and the detection result is sent to host equipment 3. By this, the setting-out section 26 can recognize the class of the liquid tank with which image formation equipment 1 is equipped, or recording head unit, and can use it for setting out of each function. In addition, at the time of setting out of various kinds of functions in this setting-out section 26, it can carry out in a screen as shown in above-mentioned drawing 6 thru/or above-mentioned drawing 9 . The content set up in this setting-out section 26 is sent to image recording equipment 1 with image data.

[0038] A control section 22 controls each part as image formation equipment 1 like the example shown in drawing 1 . Moreover, according to the recording mode set up in the setting-out section 26 prepared host equipment 3, the image data sent from host equipment 3 is changed into the data in which image formation is possible, it sends out to the head controller 11, and an image is made to form.

[0039] In addition, also when the detection result by the detection section 24 cannot be sent to host equipment 3, it thinks. At this time, when "high definition" and "both sides" are set up as a recording mode set up in the setting-out section 26 and wearing of the optimal liquid tank for a recording mode with many amounts of liquids used in the detection section 24 or a recording head unit is being detected, it can constitute so that double-sided record may be forbidden. in this case -- changing to one side record automatically **** -- or a control panel 13 to an error message -- outputting -- image formation -- a halt -- or it can avoid carrying out

[0040] In above-mentioned explanation, the recording mode with many amounts of liquids to be used is not restricted to the recording method which carries out the overprint of the light-colored ink. For example, also in the color recording method using usual dark color ink, there are many amounts of liquids which will be used if monochrome record is compared. When it is easy to generate reverse side projection by this color recording method, it can treat as a recording mode with many amounts of liquids which use a color recording mode, and it can constitute so that double-sided record may be forbidden. Moreover, what is necessary is to constitute possible [setting out of the recording mode of double-sided record] only in the case of a high-speed recording mode, in carrying out reverse side projection by the standard recording mode. Furthermore, even if it is image formation equipment which can record only monochrome, for example even if it is not color record, various kinds of recording methods can be considered. If the recording method which carries out reverse side projection, using a liquid so much is in this, in the recording mode using that recording method, selection of the recording mode of double-sided record can be forbidden. Of course, this invention is applicable about all recording modes not only with these examples but many amounts of activity liquids which carry out reverse side projection.

[0041]

[Effect of the Invention] Since selection of the recording mode which performs double-sided record is forbidden when the recording mode with many amounts of liquids used as a recording mode is set up according to this invention so that clearly from the above explanation, when reverse side projection is carried out and sufficient image quality may not be acquired, it is effective in double-sided record to which image quality fell not being performed.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the outline block diagram showing the gestalt of operation of the 1st of this invention.
[Drawing 2] It is the block diagram showing an example of the Records Department.
[Drawing 3] It is the block diagram showing another example of the Records Department.
[Drawing 4] It is the flow chart which shows an example of the setting-operation of the recording mode in the gestalt of operation of the 1st of this invention.
[Drawing 5] It is the outline block diagram showing the gestalt of operation of the 2nd of this invention.
[Drawing 6] It is explanatory drawing of an example of the actuation screen at the time of the high-definition selection in the setting-out section (basic screen).
[Drawing 7] It is explanatory drawing of an example of the actuation screen at the time of the high-definition selection in the setting-out section (output screen).
[Drawing 8] It is explanatory drawing of an example of the actuation screen at the time of the standard image quality selection in the setting-out section (basic screen).
[Drawing 9] It is explanatory drawing of an example of the actuation screen at the time of the standard image quality selection in the setting-out section (output screen).
[Drawing 10] It is the outline block diagram showing the gestalt of operation of the 3rd of this invention.

[Description of Notations]
1 [-- Head controller,] -- Image formation equipment, 2 -- An image formation control unit, 3 -- Host equipment, 11 12 -- A recording head, 13 -- A control panel, 14 -- External interface, 15 [-- External interface,] -- The controller section, 16 -- A sensor, 17 -- An internal bus, 21 22 [-- An internal bus, 26 / -- The setting-out section, 27 / -- The tank classification detection section 41 / -- A liquid tank, 42 / -- A recording head, 43 / -- The joint section, 44 / -- Carriage, 51 / -- Image quality selections, 52 / -- Double-sided selections.] -- A control section, 23 -- A control panel, 24 -- The detection section, 25

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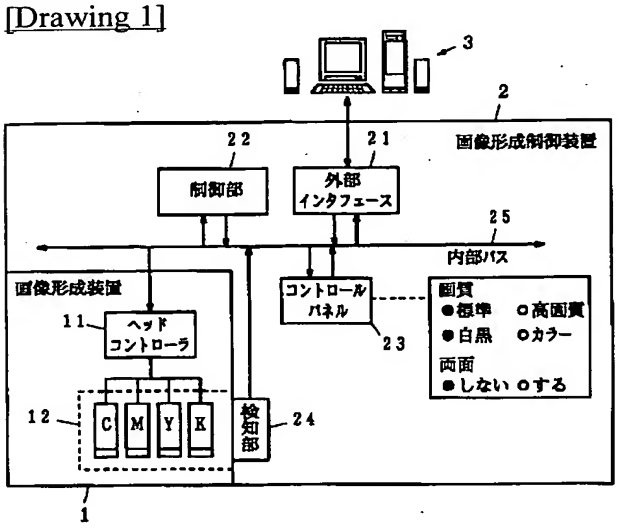
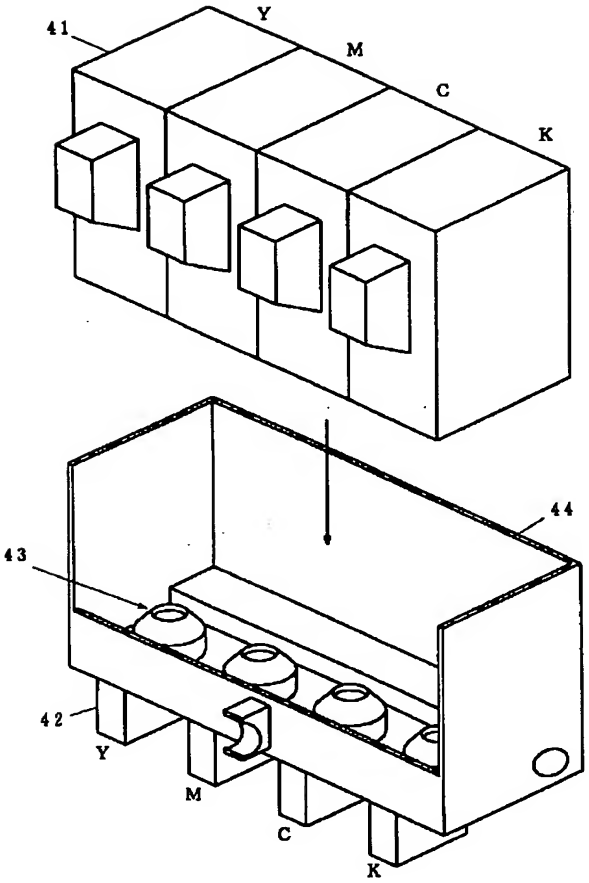
DRAWINGS

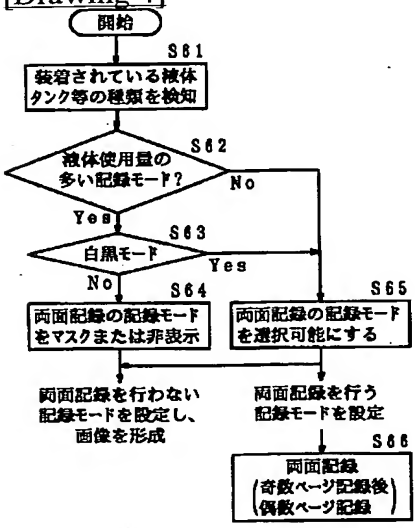
[Drawing 1]



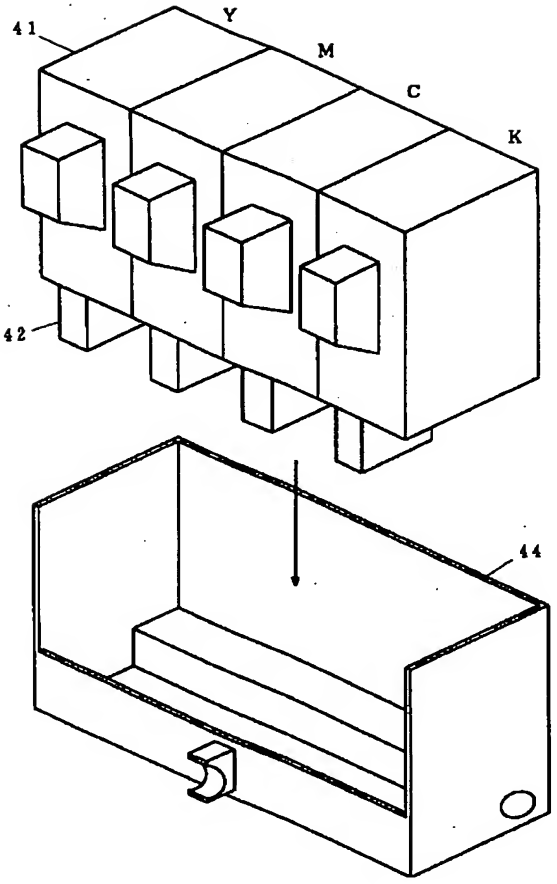
[Drawing 2]



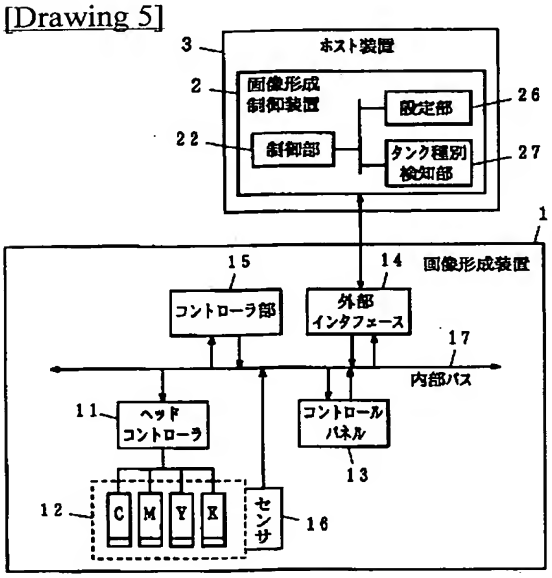
[Drawing 4]



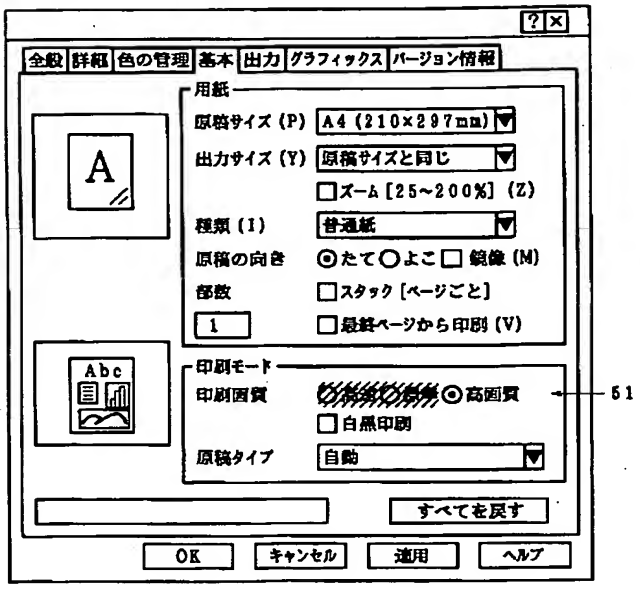
[Drawing 3]



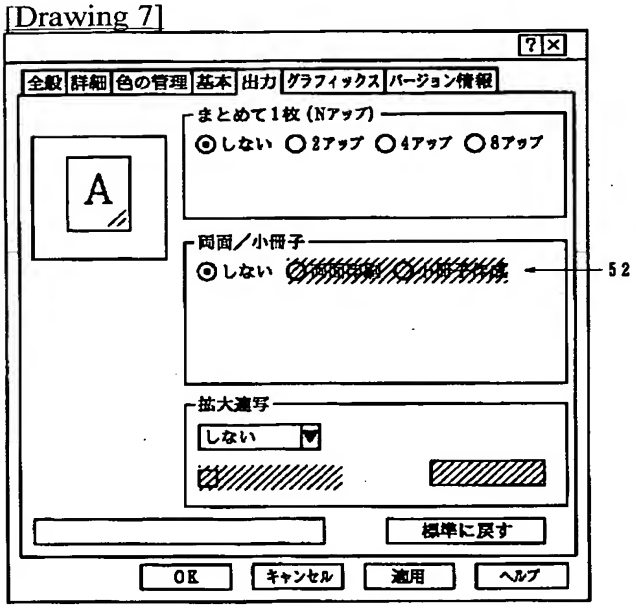
[Drawing 5]



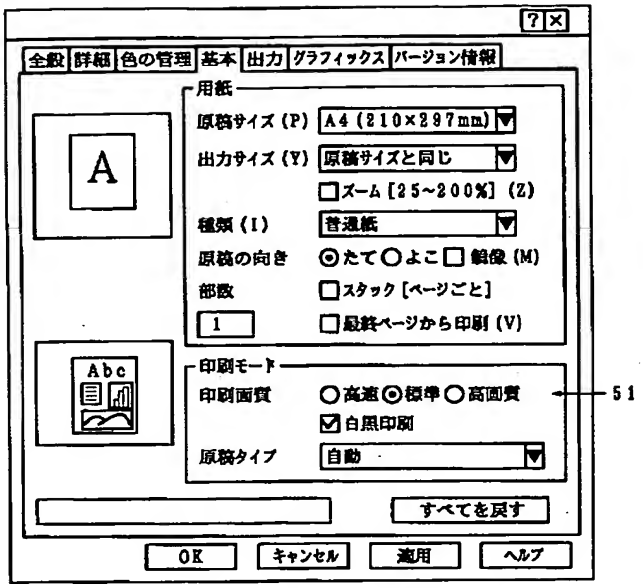
[Drawing 6]



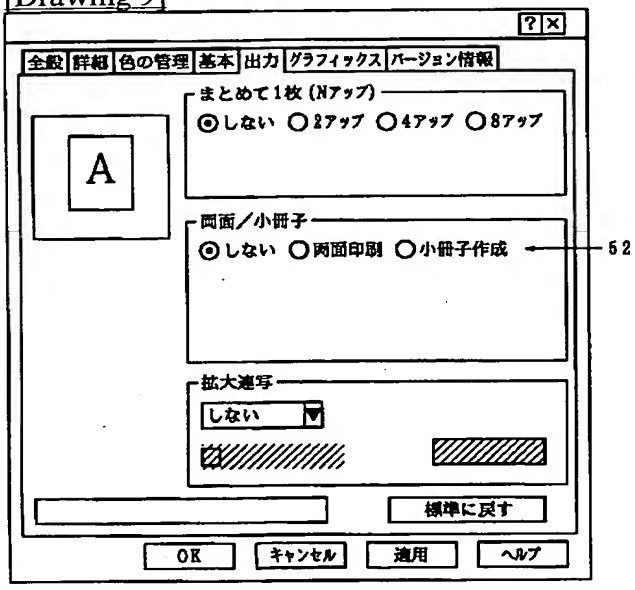
[Drawing 7]



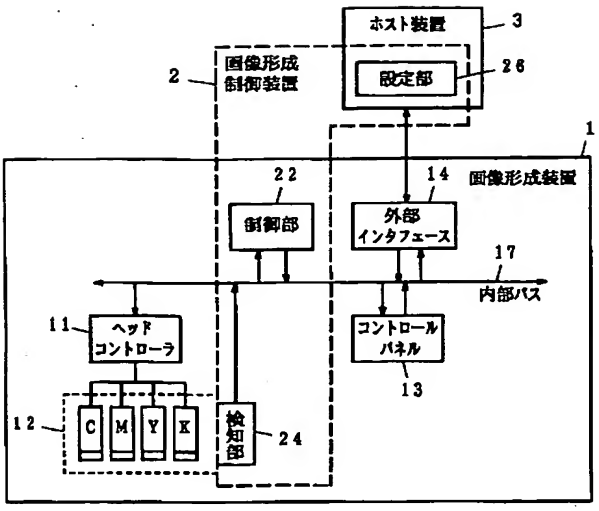
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Translation done.]